

WHAT IS CLAIMED IS

1. A system for inspecting a component comprising:  
a two dimensional inspection system locating a  
5 plurality of features on the component and generating  
feature coordinate data; and  
a three dimensional inspection system coupled to the  
two dimensional inspection system, the three dimensional  
inspection system receiving the feature coordinate data and  
10 generating inspection control data.

2. The system of claim 1 further comprising a  
component inspection controller coupled to the three  
dimensional inspection system, the component inspection  
15 controller receiving the inspection control data and  
controlling the location of the component based upon the  
inspection control data.

3. The system of claim 1 further comprising:  
20 a reference image system storing one or more reference  
images;  
a test image system storing test image data; and  
a comparator system coupled to the reference image  
system and the test image system, the comparator system  
25 generating difference data from the reference image data and  
the test image data.

4. The system of claim 3 wherein the reference image  
system comprises a die base reference image system storing  
30 image data of a die prior to installation of bumps.

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5. The system of claim 3 wherein the reference image system a test die reference image system storing image data of a test die with installed bumps.

6. The system of claim 1 wherein the two dimensional inspection system further comprises a feature location tracking system storing the feature location data and providing the feature location data to the three dimensional inspection system after all features of the component are located.

7. The system of claim 1 wherein the three dimensional inspection system further comprises a laser placement system that determines the location of a laser inspection track on the component from the feature location data.

8. The system of claim 1 wherein the three dimensional inspection system further comprises a three dimensional image data analysis system that receives laser image data and determines three dimensional feature location data from the laser image data.

5       determining control data for a three dimensional  
inspection of the component from the location data for each  
of the plurality of features; and

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15       comparing test image data to die base reference image  
data to generate difference data; and

20            11. The method of claim 9 wherein processing the two dimensional image data of the component to determine the location data for each of the plurality of features on the component comprises:

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    comparing test image data to test die reference image
25  data to generate difference data; and

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12. The method of claim 9 wherein determining the control data for the three dimensional inspection of the component from the location data for each of the plurality of features comprises:

5       determining placement sequence data for a laser inspection track such that the laser inspection track is placed on each of the plurality of features at least once; and

10       determining component movement control data from the placement sequence data.

13. The method of claim 9 wherein performing the three dimensional inspection of the component using the control data comprises:

15       obtaining image data from a laser inspection track on the component; and

      analyzing the image data to determine the location of one or more features.

20       14. The method of claim 13 further comprising moving the component until the image data has been obtained for each of the features on the component.

25       15. The method of claim 13 further comprising generating error data if the location of any of the one or more features is outside of a predetermined location range.

receiving first image data of a component prior to installation of one or more features;

comparing the first image data and the second image data to generate difference data; and

17. The method of claim 16 wherein receiving the first image data of the component prior to installation of the one or more features comprises receiving the first image data of a die prior to the installation of one or more contact bumps.

18. The method of claim 16 wherein receiving the first image data of the component prior to installation of the one or more features comprises receiving the first image data of a representative component prior to the installation of the one or more features.

19. The method of claim 16 further comprising  
25 determining the placement of a three-dimensional inspection  
component based upon the location of each of the one or more  
features.

20. The method of claim 19 wherein determining the  
30 placement of the three-dimensional inspection component  
comprises determining the location of a laser track.

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